TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE · · · FOREST SERVICE
UNIVERSITY FARM ST. PAUL 1, MINNESOTA

No. 408

Red Pine Suppressed for Forty Years Responds to Release

ted pine (Pinus resinosa) plantations severely suppressed by a dense hardwood overtory for as long as 40 years will still respond to release, according to the results btained from studies in northern Lower Michigan.

s part of a comprehensive plantation management experiment, designed to test the ffects of varying degrees of release on underplanted pine from 3 to 40 years old, red pine plantation on average site in the Higgins Lake State Forest was treated n the spring of 1950. At this time three one-half-acre plots of overtopped red ine, planted in 1910 and growing under a dense canopy of northern red oak, white ak, and red maple, were released as follows:

Plot 1: All competing hardwood trees removed.
Plot 2: 40 square feet of basal area and 166 trees over 3 inches d.b.h. left per acre.
Plot 3: 80 square feet of basal area and 462 trees over 3 inches d.b.h. left per acre.

he height growth of 50 sample trees in each plot was measured every fall for three ears following treatment. In order to compare the response to the degree of supression under which the pines grew before release, they were grouped into three uppression classes based on total heightbefore release. (See reverse side of heet for tabulation of data.)

esponse to release was apparent the first growing season and was in direct proporion to the amount of overstory removed. This response, the first growing season fter treatment, was reflected mainly by increased needle length and greater density f foliage. During the second growing season growth was also measurably improved specially in the completely released plot and among the better developed trees in he partially released area. By the end of the third growing season both the ompletely and partially released trees were far ahead of the trees in the control lot in height growth. Even the most badly suppressed trees in the completely released plot, which averaged only 3.3 feet tall before release, grew three times as nuch during the fourth growing season as the tallest, least suppressed trees in the ontrol area and almost twice as much as the tallest trees in the partially released lot. The average completely released red pine grew 0.72 foot annually during the our years after release, while the average check tree was growing 0.28 foot. The verage partially released tree grew 0.45 foot in the same period.

lthough most red pine plantations are now being established on open sites or are released at an early age, many of the approximately 500,000 acres of red pine plantations in the Lake States are overtopped and suppressed to varying degrees. The results of this study indicate that release of these plantations after long periods f suppression may be feasible where release costs are not excessive and sufficient ines have survived.

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Height growth of suppressed red pine before and after release

Treatment Spring 1950	Suppression class 1/	Average total height		Average height growth				Bas
		1949	1953	1950	1951	1952	1953	
		Feet	Feet	Feet	Feet	Feet	Feet	Nu tr
Plot 1 (complete release)	A	10.5	13.9	.3	.7	.8	1.6	
	B	6.6	9.6	.2	.5	.7	1.6	
	C	3.3	5.7	.1	.4	.6	1.3	
	Average	6.8	9.7	.2	.5	.7	1.5	2/
Plot 2 (Partial release)	A	9.9	12.2	.3	.6	.6	.8	
	B	6.2	8.0	.2	.4	.5	.7	
	C	3.6	4.9	.1	.2	.4	.6	
	Average	6.6	8.4	.2	.4	.5	.7	2/
Plot 3 (No release)	A	9.3	10.6	.4	.3	.3	.3	
	B	6.9	8.0	.3	.2	.3	.3	
	C	4.3	5.1	.2	.2	.2	.2	
	Average	6.8	7.9	.3	.2	.3	.3	2/

1/ Suppression class A represents the 17 tallest pines at the time of treatment; suppression class B the next 17 tallest, and suppression class C the shortest 16 trees in 1950 for each treatment.

2/ Total.